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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/038,230 03/11/98 KOYANAGI

T 1217-980347

IM22/1028

EXAMINER

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PITTSBURGH PA 15219-1818

METZMAIER, D

ART UNIT

PAPER NUMBER

1721

DATE MAILED:

10/28/99

7

**Please find below and/or attached an Office communication concerning this application or proceeding.**

**Commissioner of Patents and Trademarks**

# Office Action Summary

Application No.  
**09/038,230**

Applicant(s)  
**Koyanagi et al.**

Examiner  
**Daniel S. Metzmaier**

Group Art Unit  
**1721**



☒ Responsive to communication(s) filed on Aug 5, 1999

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire three month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

## Disposition of Claims

☒ Claim(s) 1 and 4 is/are pending in the application.

Of the above, claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

☐ Claim(s) \_\_\_\_\_ is/are allowed.

☒ Claim(s) 1 and 4 is/are rejected.

☐ Claim(s) \_\_\_\_\_ is/are objected to.

☐ Claims \_\_\_\_\_ are subject to restriction or election requirement.

## Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on \_\_\_\_\_ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some\* ☐ None of the CERTIFIED copies of the priority documents have been  
☐ received.

☐ received in Application No. (Series Code/Serial Number) \_\_\_\_\_.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\*Certified copies not received: \_\_\_\_\_

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

## Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). \_\_\_\_\_

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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### **DETAILED ACTION**

Claims 1 and 4 are pending in the instant application. Claim 1 has been amended and claims 2 and 3 canceled by the amendment filed August 5, 1999, Paper No. 6.

#### ***Claims interpretation***

1. Applicants claims are now limited to a particle size range of 11 to 30 nanometers. Said range has not been shown to be critical to the invention. At page 6, lines 20-23, applicants state the particle size is not particularly limited as long as the sol is stable.

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for sols wherein the dispersing medium has a dielectric constant of 10 to 85, does not reasonably provide enablement for all sols having a dispersing medium of unspecified dielectric constant or more specifically a dielectric constant of less than 10. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Page 8, lines 19-21, teaches when the dielectric constant is less than 10, the sols are unstable.

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*Claim Rejections - 35 USC § 103*

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yajima et al., 5,366,545. Yajima (abstract; column 2, line 8 et seq; example 1; and claims) discloses coating compositions of colloidal composite particles.

Yajima differs from the claims in an exemplified SiO<sub>2</sub> composite claimed.

Yajima exemplifies sols having particle sizes within the claimed range.

The Yajima particles are ZrO<sub>2</sub>/SnO<sub>2</sub> with a coating of silanes including tetraalkoxy-, tetraacetoxysilanes and  $\gamma$ -glycidoxypolytrimethoxysilane. Yajima (claim 6) clearly contemplates

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mixtures of silanes. The use of tetraalkoxysilane or tetraacetoxysilanes with any of the more polar silanes such as those exemplified would result in at least some silicon dioxide,  $\text{SiO}_2$ , composite structure. Applicants' claims do not distinguish on amounts of the  $\text{SiO}_2$  in the composite particles.

Yajima (column 6, lines 15-30, particularly lines 21 and 29) also teaches the compositions may further comprise hardening agents including silicic acid and silicon dioxide,  $\text{SiO}_2$ .

The properties of the organic compound and the dispersion medium would have been inherent and/or are defined in applicants disclosure to include  $\gamma$ -glycidoxypyltrimethoxysilane. It is noted methanol has a dielectric constant of about 32 and water is 77.

It would have been obvious to the ordinary skilled artisan at the time of applicants invention to employ mixtures of silanes including the tetraalkoxysilane or tetraacetoxysilanes which would have advantageously been expected to increase the coating adhesion and thickness and form  $\text{SiO}_2$  composite structure.

6. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nass et al., 5,593,781. Nass (abstract) discloses the checking or decreasing the agglomeration of nanosize particles by dispersing and surface treating and wholly or partly removing the dispersing agent. Nass (column 2, lines 3 et seq) teaches it is well known to sterically stabilize silica. Nass (column 2, lines 35-46) teaches the ceramic nanosize particles may include silicates (mullite or cordierite) which reads on applicants composite oxides of silica and other inorganic oxides.

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Nass differs from the claims in the exemplified use of silicates and the characterization of the treating agent as having a molecular polarizability claimed.

Nass (column 3, lines 10-43) teaches numerous organic compound treating agents exhibiting a molecular polarizability including organo-alkoxysilanes related to those instantly disclosed. Based on a related structure and related functional use thereof, the skilled artisan would have expected the treating agents taught in the Nass reference to have the claimed molecular polarizability.

It would have been obvious to the ordinary skilled artisan at the time of applicants invention to employ the nanosized particulate silicates as ceramic precursors as contemplated in the Nass reference with the treating agents set forth therein.

#### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1 and 4 have been considered but are moot in view of the new ground(s) of rejection.

#### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

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the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Metzmaier whose telephone number is (703) 308-0451. The examiner can normally be reached on Monday through Friday from nine to five-thirty.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gabrielle Brouillette, can be reached at (703)308-0756.

Official Papers may be submitted to **Group 1700** by facsimile transmission at (703)305-5408 and Official After Final facsimile transmissions may be submitted to **Group 1700** by facsimile transmission at (703)305-3599 in accordance with the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989).

Any inquiry of a general nature or relating to the status of this application should be directed to the **Group 1700** receptionist whose telephone number is (703) 308-0661.

DSM  
October 25, 1999

*Richard D. Lovering*  
RICHARD D. LOVERING  
PRIMARY EXAMINER  
GROUP ~~1200~~ 1700